

"solely by means of an insulating washer 80." Similarly, '445 teaches that insulating discs 121 and 116, described as punched polyester, are separators inserted between conductive components as shown in Figure 1. In each cited reference there only appears to be the use of insulating material in the form of a washer or disc to insulate conductive components.

The invention claimed in independent claim 18 and dependent 19 relates to electrically isolating one conductive geophone component from another without the need for insulating washers and/or spacers by treating the surface of one or both electrically conductive components so as to render the surface electrically nonconductive. Claim 18 includes the limitation "treating a surface of at least one of the first and second components to render at least a portion of the treated surface electrically non-conductive." The advantage of such treatment is overcoming the disadvantages of using separate insulators as in the '692 and '445 references, which are addressed in the description at page 3 lines 4-10.

Neither the '692 reference nor the '445 reference teaches "treating a surface of at least one of the first and second components to render at least a portion of the treated surface electrically non-conductive." Therefore the references do not teach each and every element of independent claim 18 as required to anticipate a claimed invention under 35 USC § 102(b). Consequently, Applicant respectfully submits that independent claim 18 and dependent claim 19 are allowable over the cited references.

### **35 USC § 103 REJECTIONS**

Claim 46 stands rejected under 35 USC § 103(a) as being unpatentable over McNeel ('692, '520), Hall, Jr. ('464) or Wilson et al. ('445) when taken in view of Pagliarini, Jr. ('390). Applicant respectfully traverses, because the examiner has not presented a prima facie case for obviousness.

The Examiner cites '692, '520, '464, and '445 as being exemplary of prior art geophones that include a housing with first and second terminals. Pagliarini, Jr. ('390) relates to an acoustic piezoelectric transducer and teaches one embodiment as being a "double-ended" embodiment. The Examiner cites '390 for stated advantages and concludes that one of ordinary skill could modify the above single-sided geophones to double-sided geophones and that inherent in a double-sided geophone is the terminal located on either side of the housing rather than on one side. Applicant respectfully traverses.

The key limitations in claim 46 of first and second terminals positioned on respective first and second ends is not taught by any reference cited and is not inherent in a double-sided geophone. Regarding the '390 reference, Applicant submits that the teaching includes nothing relating to terminals. The reference teaches a stack of annular piezoelectric elements **128** is provided with foil electrodes **136** interposed therebetween and at each end thereof. Wiring to such electrodes is not shown or discussed other than that the elements **128** are wired in parallel. One could easily route wiring to terminals located anywhere on housing **110**. Furthermore, it seems that terminals located at either end of the double-ended embodiment taught in '390 would frustrate the main purpose of the embodiment, i.e., such terminal location would interfere with the stated omnidirectional radiation pattern, which is enabled by the housing **110** openings at both ends. See column 5 lines 32-35 and lines 54-56. Furthermore the stated advantages in Applicant's disclosure, i.e. "a geophone design that is simpler to manufacture and more resistant to mechanical shocks and vibration," are different than the omni-directional radiation pattern and reduction of housing motion stated in '390 at column 5 lines 54-61. Applicant respectfully submits that the key limitation in claim 46 is not taught by the combination of references and that there is no suggestion that leads to a proper conclusion that the limitation would be inherent in the teachings.

Claims 44, 45 and 47 stand rejected under 35 USC § 103(a) as being unpatentable over Thompson ('674). Applicant respectfully submits that the examiner has not presented a prima facie case for obviousness as to claims 45 and 47.

The examiner cites the structure as teaching an insulating surface between conductive components. There is no clarification in the March 26 communication as to what conductive components are separated by what insulating surface. In the July 3, 2002 communication, the Examiner cites Figure 3a element 9 as the insulating surface and elements 2' and 2" as the conductive elements. Therefore, the arguments below presume the Examiner continues to read Thompson in this manner. If there is another reading to support the present rejection, Applicant respectfully requests clarification.

In describing the prior art shown in Figure 1a, the '674 reference states, "for simplicity of explanation the electrodes which are positioned between the rings 1, *and the insulating washers which are positioned at the ends of the stack 2 of rings are not shown.* Such details are within the knowledge of the ordinarily skilled in the art." The reference then compares the center mass structure of Figure 3a by stating that "other features of typical transducers such as *insulating washers*, wiring, electrical contacts etc. are well known..." Thus, the details not shown in the structure of Figure 3a include insulating washers between the mass 9 and elements 2' and 2". Furthermore the mass 9 in '674 is described as being fabricated from tungsten, steel or aluminum. Therefore, the teaching of '674 can be reasonably read to teach only that a conductive mass 9 is insulated from conductive elements 2' and 2" by a known insulating washer, which is not illustrated in the figure.

Claim 44 includes the limitation of an insulating layer disposed on the surface of a conductive pathway. A stated advantage being that "the use of conventional insulating rings, bushes, ceramic insulators, glass seals, and similar devices is eliminated or reduced. This results in a geophone design that is simpler to manufacture..." See page 22, lines 17-19 of the present application. Applicant respectfully submits that an insulating washer is

not a "layer disposed on a surface", but a separate structural component and that reading claim 44 to include disposing an insulating washer between conductive components would frustrate the purposes of the invention. Therefore, Applicant respectfully submits that independent claim 44 is not obvious in view of '674.

Dependent claim 45 depends from independent claim 44 and further limits the insulating layer as one of several particular layers. None of these layering materials, which are disposed on a surface of a conductive component, can be reasonably construed as being taught by a reference teaching a conventional insulating washer. Therefore, Applicant respectfully submits that claim 45 is not obvious in view of '674 for the reasons stated for claim 44 and for the additional reasons stated with respect to the added limitations of claim 45.

Claim 47 is an independent claim that includes the limitation of first and second pluralities of conductive elements, wherein the first plurality includes insulative surfaces for insulating the first plurality from the second plurality of conductive components. As stated above, the '674 references teaches only the use of known insulating washers and does not teach or suggest the use of electrically conductive elements having an insulative surface for insulating the elements from other conductive elements. Consequently, independent claim 47 is not obvious in view of '674.

Claims 1-17 and 20-30 stand rejected under 35 USC § 103(a) as being unpatentable over Hall, Jr. ('464) or McNeel ('692, '520) when taken in view of Thompson ('674) or Pagliarini, Jr. ('390). Applicant respectfully traverses, because the examiner has not presented a prima facie case for obviousness.

Applicant has discussed the teachings of the cited art above with respect to other claims rejected. The combination of elements in independent claims 1, 11, and 20 are not taught or suggested by the cited combination. In particular, the Examiners use of

inherence to supply the double-ended structure in an obviousness rejection is not supported by the teachings.


With respect to independent claim 17 and to certain dependent claims, the claims including limitations as to insulating materials disposed on the surface of conductive elements is also outside the reaching of the cited references. See claims 8-10, 13-16, 17, 22, and 27-30.

### **CONCLUSION**

For all of the foregoing reasons, applicant submits that the claims are allowable over the prior art of record. A check in the amount of \$110 for a one-month extension of time is enclosed with this response. The Commissioner is hereby authorized to charge any additional fee due for this response or credit any overpayment to Deposit Account No. 13-0010 (IO-1027-US).

Respectfully submitted,

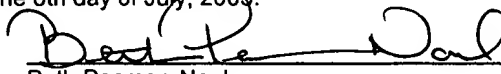
Date: July 8, 2003

  
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### **CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8(a)**

I hereby certify that this paper, along with any referred to as being attached or enclosed, is being forwarded to MS: Non-Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450, via the United States Postal Service, First Class Mail, prepaid on the 8th day of July, 2003.

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